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Compositions and Methods for Reverse Transcription of Nucleic Acid Molecules

ABSTRACT

5 The present invention is generally related to compositions and methods for
the reverse transcription of nucleic acid molecules, especially messenger RNA
molecules. Specifically, the invention relates to compositions comprising mixtures
of polypeptides having reverse transcriptase (RT) activity, and to methods of
producing, amplifying or sequencing nucleic acid molecules (particularly cDNA
10 molecules) using these compositions or polypeptides, particularly at temperatures
above about 55°C. The invention also relates to nucleic acid molecules produced
by these methods, to vectors and host cells comprising these nucleic acid
molecules, and to the use of such nucleic acid molecules to produce desired
polypeptides. The invention also relates to methods for producing Rous Sarcoma
15 Virus (RSV) and Avian Myeloblastosis Virus (AMV) RTs or other Avian
Sarcoma-Leukosis Virus (ASLV) RTs (α and/or β subunits thereof), to isolated
nucleic acid molecules encoding such RSV RT, AMV RT or other ASLV RT
subunits, to vectors and host cells comprising these isolated nucleic acid molecules
and to RSV RT, AMV RT and other ASLV RT subunits produced by these
20 methods. The invention further relates to nucleic acid molecules encoding
recombinant heterodimeric RT holoenzymes, particularly heterodimeric RSV RTs,
AMV RTs or other ASLV RTs (which may be $\alpha\beta$ RTs, $\beta\beta$ RTs, or α RTs),
vectors (particularly baculovirus vectors) and host cells (particularly insect and
yeast cells) comprising these nucleic acid molecules, methods for producing these
heterodimeric RTs and heterodimeric RTs produced by these methods. The
25 invention also relates to kits comprising the compositions, polypeptides, or RSV
RTs, AMV RTs or other ASLV RTs of the invention.